CITOGENETICS EFFECTS INDUCED BY THE ASCORBIC ACIDTREATMENT OF *LARIX DECIDUA* MILL. SSP. *CARPATICA* AND *PICEA ABIES* (L.) KARST

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Keywords: ascorbic acid, seeds of *Larix decidua* and *Picea abies* , mitotic division, aberrations

Abstract: The paper present the influence of ascorbic acid upon the mitotic division of *Larix decidua* Mill ssp. *carpatica* and *Picea abies* (L.) Karst. The treatment is applied of two variants, germinated seed in ascorbic acid (variantA)and germinated seeds in disttilate water, than treated with ascorbic acid in 3 concentrations (variant B).

INTRODUCTION

The investigation of the cell division is a permanently preoccupation, this process having a major importance in development of the individual biological systems.

In this approach we propose to make citogenetics studies at *Larix decidua* Mill. ssp. *carpatica* and *Picea abies* L.

The ascorbic acid is known as an organic acid with antioxidant properties. Its appearance is white to yellow crystals or powder. The ascorbic acid is commonly known as vitamin C. He is use also as a food additive known as E 300.

In this experiment we observed the stimulator or inhibitor effect of ascorbic acid to the mitotic division, and estimated the instalment of the aberrations appearance.

MATERIALS AND METHODS

The biological material used in this experiment was represented by seeds of *Larix decidua* Mill ssp. *carpatica* and *Picea abies* (L.) Karst. from the forest Departament of Piatra Neamţ (2005).

The seeds were put to germinaiion in lab conditions. When the roots reached 5 - 10 mm in length, they were treated with ascorbic acid, and then were immersed in distillate water (three time for 10 minutes) for washing.

Substance: ascorbic acid (vitamin C), 0.1 %, 0.25 %, 0.5%;

Action variants:

A - germinated seeds in ascorbic acid, 0.1 %, 0.25 %, 0.5 %;

B – germinated seeds in distillate water, then treated with ascorbic acid 0.1 %, 0.25 %, 0.5 % for 2, 4 and 6 hours

Except this variants, there also used a control plot and in this case no treatment were applied to the radicular meristems.

For the cytogenetic investigations, the roots were fixed in 3:1 fixing solution for 24 hours , then hydrolised with HCl (50 %) for 6 minutes and coloured with coloring Carr.

The radicular meristems was displeyd using squash technique.

The microscopical examination was carried out using the optic microscop Novex K-Range.

The microphotographics were made with digital camera Canon.

RESULTS AND DISSCUSIONS

1. The dynamics of mitotic index of *Larix decidua* Mill. ssp. *carpatica* and *Picea abies* (L.) Karst.

Variant A – the mitotic index has an increase growth at the concentration of 0.1 %, but generally it maintains increase at both species and to all the 3 concentrations (except the concentration of 0.5 % ascorbic acid from *Larix decidua*);

Variant B – comparative, the two species (*Picea abies* L. and *Larix decidua* Mill.), we observed that the mitotic index decrease with the increase of the concentration and the time of treatment.

2. **The dynamics of normal and altered ana-thelophases at *Larix decidua* Mill. ssp. *carpatica* and *Picea abies* (L.) Karst.**

Variant A – at the both species we observed a progressive decrease of the aberrant A-T number, comparative the etalon

Variant B – at this variant (germinated seed, then treated with ascorbic acid with 3 concentrations), we also observed a decrease of the aberrant A-T number, proportional with the increase of the concentration and time treatment, comparative the basic test.

3. **The frequency of cells in mitotic division to *Larix decidua* Mill. ssp. *carpatica* and *Picea abies* L.**

Variant A – we observed that the mitotic division have a constant increase, and the prophases and telophases have the highest procentage

Variant B – at this variant we observed a similar situation like variant A

4. **The dynamics of aberrations to *Larix decidua* Mill. ssp. *carpatica* and *Picea abies* L.**

At both variants and species (*Larix decidua* ssp. *carpatica* and *Picea abies*) the simple and multiple bridges have the highest frequency, but, in a small number it appears and A-T with fragments, with bridges and fragments, multipolar A-T, A-T with retardatary chromosomes and also interphases with micronucleus.

CONCLUSIONS

The cell division is more intense stimulated at *Larix decidua* Mill. ssp. *carpatica* that *Picea abies* L.

The frequency of the aberrant A-T is decrease comparative the normal A-T, at both species, especially at B variant – germinated seeds and treated with ascorbic acid.

From the division aberrations appeared, the simple and multiples bridges have the highest procentage.

Therefore, in this experiment is evidently the inhibitor effects to the mutations, what confirm the speciality literature.

In the future we want tested and other substances in this category for establish their effect within cell division.

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APPENDIX

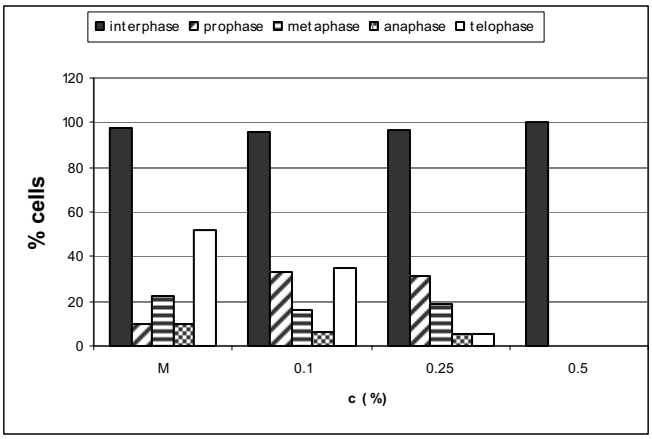

Fig.1 **VariantA**-Dynamics of cells division to *Larix decidua*

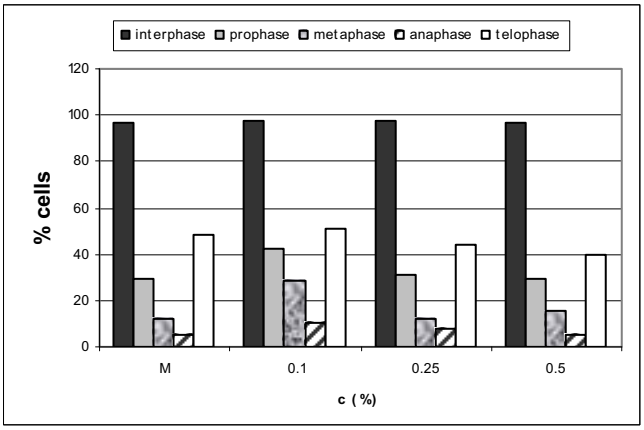

Fig.2 **Variant A**-Dynamics of cells division to *Picea abies*

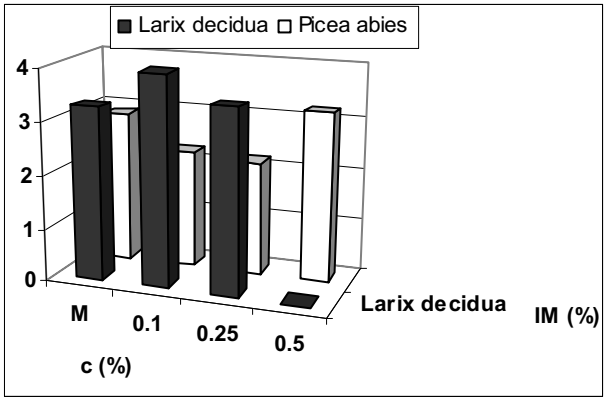

Fig.3 **Variant A**-Dynamics of mitotic index

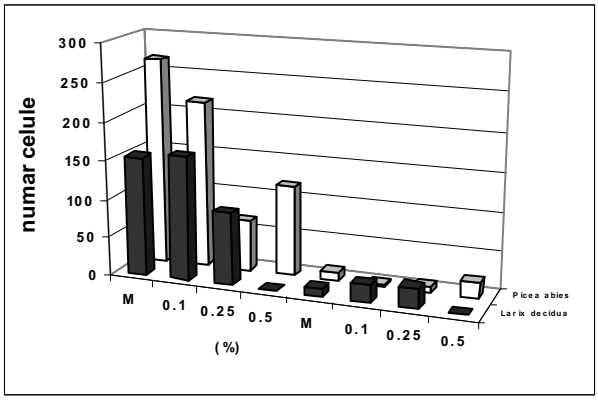

Fig.4 **Variant A**-Frequency of normal and aberrant A-T

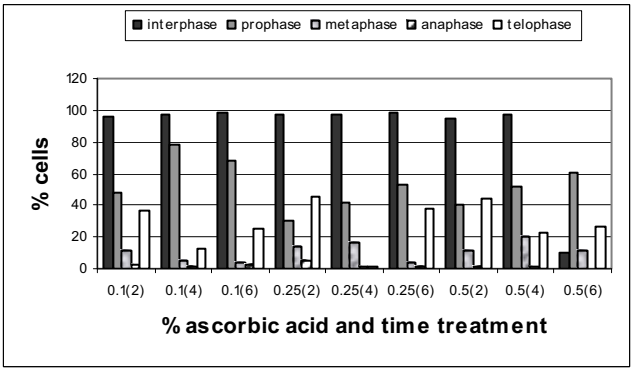

Fig.5 **Variant B**-Dynamics of cells division to *Larix decidua*

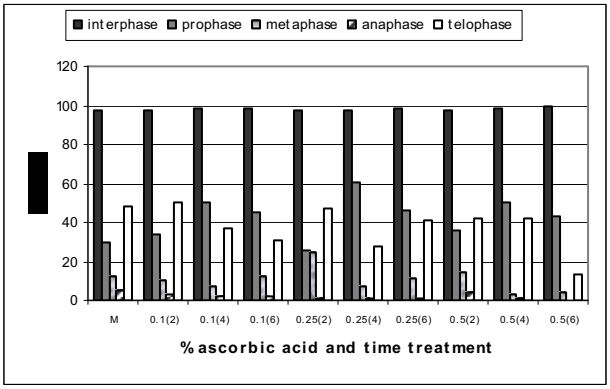

Fig.6 **Variant B**-Dynamics of cells division to *Picea abies*

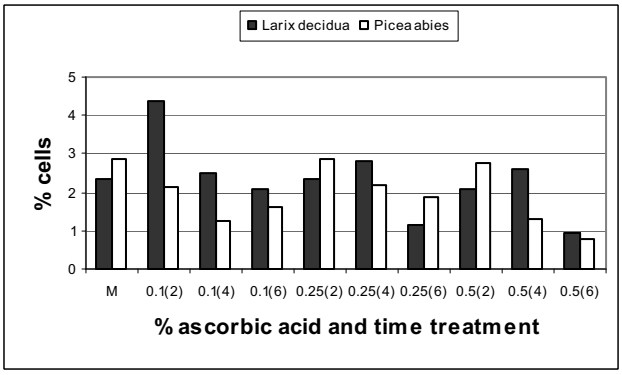

Fig.7 **VariantB**-Dynamics of mitotic index

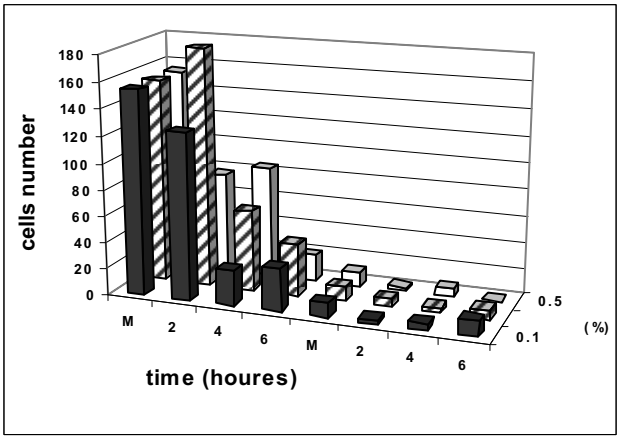

Fig.8 **Variant B**-Frequency of normal and aberrant A-T to *Larix decidua*

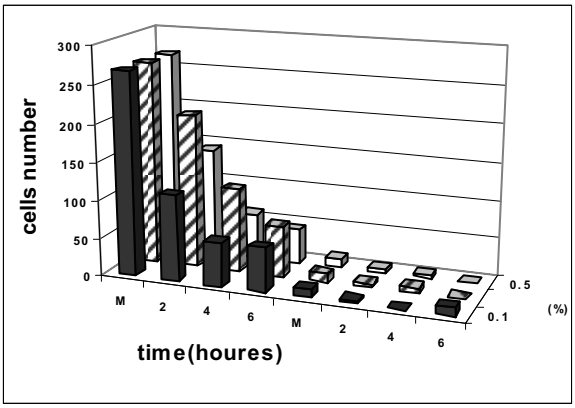

Fig.9 **Varianta B**-Frequency of normal and aberrant A-T to *Picea abies*

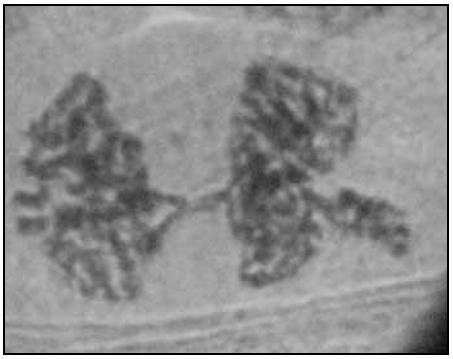

Fig.10 A-T with bridges at *Larix decidua* (0.1 %)

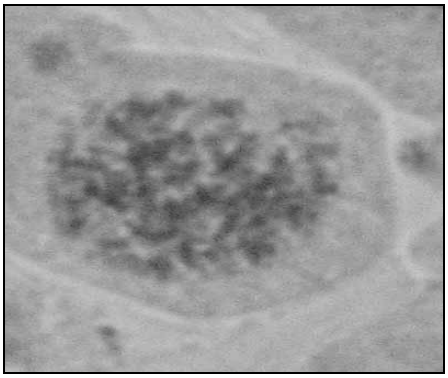

Fig.11 interphase with micronuc. at *Larix decidua* (0.1 %)

Fig.12 metaphase with expulsed material at *Larix deciduas* (0.1 %)

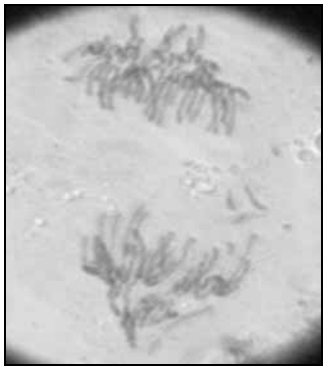

Fig.13 A-T with fragments and expulsed crs. at *Larix decidua* (0.25 %)

Fig.14 telophase with bridges and ragged bridges at *Picea abies* (0.5 %)

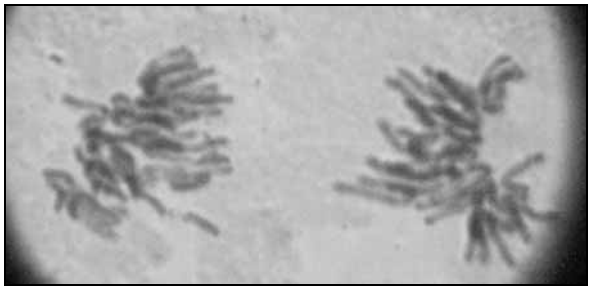

Fig.15 A-T with fragment at *Larix decidua* (0.25 %)

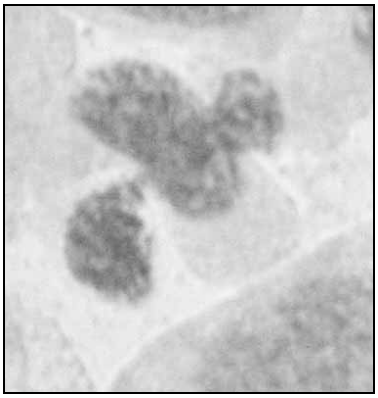

Fig.16 interphase with micronuc. at *Picea abies* (0.5 %)

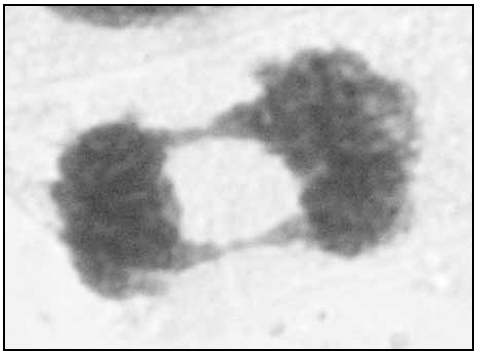

Fig. 17 telophase with duble bridges at *Picea abies* (0.5 %)